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Education

BS Civil Engineering – Rose-Hulman Institute of Technology, Terre Haute, Indiana, 1975
AAS Business Management and Supervision – Richland Community College, Decatur, Illinois 1978

Professional Registrations

Registered Professional Engineer – Michigan
Registered International Code Council Special Inspector

- Structural Steel and Bolting (S1)
- Structural Welding (S2)

Engineering Specialties

- steel construction quality and inspection
- high strength bolted joints
- welded joints for structural steel
- remediation of deficient structures
- fitness for purpose of welded joints

Technical Activities

American Institute of Steel Construction

- Specifications Committee, responsible for AISC 360 Specification for Structural Steel Buildings and AISC 341 Seismic Provisions for Structural Steel Buildings (Member 2000 – 2022, Emeritus 2022 – present)
- Task Committee on Quality Control and Quality Assurance, TC12 (Member 2007 – 2022, Emeritus 2022 – present)
- Connections Prequalification Review Panel, responsible for AISC 358 Prequalified Connections for Special and Intermediate Steel Moment Frames (Member 2001 - present)
- Task Committee on Connections, TC6 (Member 1997 – 2017, Emeritus 2022 – present)
- Task Committee on Seismic Issues, TC9 (Member 2004 – 2016)

Research Council on Structural Connections

- Vice-Chair (2018 – present)
- Specifications Committee (Member 1995 – present)

International Institute of Welding

- Board of Directors (Vice-President 2022 – 2025, Director 2020 – 2022)
- Technical Management Board (Member 2021-2024)
- Working Group – Technical Commissions (Chair 2021-2024)
- Commission XVIII on Quality Management in Welding and Allied Processes (Chair 2013 – 2025)
- Commission XV on Design, Analysis and Fabrication of Welded Structures (Chair 2006 – 2015)
- Subcommission XV-C on Fabrication (Chair)
- Commission XIII on Fatigue of Welded Components and Structures (Expert)
- Working Group on Regional Activities (Member)
- Working Group on Standardization (Member)

American Welding Society

- D1 Structural Welding Committee, responsible for D1 Structural Welding codes (Member 1996 – present)
- D1 Subcommittee on Steel, responsible for AWS D1.1 (Member 1996 – present)
- D1 Subcommittee on Seismic Welding, responsible for AWS D1.8 (Member 2000 – present, Chair 2021 – 2023)
- D1 Subcommittee on Strengthening and Repairing Existing Structures (Advisor, past Chair)
- D1 Executive Committee (Member)
- D1 Task Group on Design (past Member)
- D1 Task Group on Prequalification (past Member)
- International Standards Activities Committee (Member, Vice-Chair 2018 – present)

ISO – International Organization for Standardization

- ISO/TC 167 Steel and aluminium structures (Member, Chair US Technical Advisory Group)
- ISO/TC 167/WG 3 Steel and aluminium structures, Execution of steel structures (Chair)
- ISO/FDIS 17607 – all parts, Steel structures — Execution of structural steelwork (Project Leader, Convenor)
- ISO 22688 Brazing – Quality requirements for brazing of metallic materials (Project Leader)

ASTM International

- Committee A01 on Steel, Stainless Steel and Related Alloys (Member)
- Subcommittee A01.02 on Structural Steels (Member)
- Committee F16 on Fasteners (Member)
- Subcommittee F16.02 on Steel Bolts, Nuts, Rivets and Washers (Member)
- Subcommittee F16.96 on Bolting Technology (Member)

American Council of the International Institute of Welding

- Chair (2021 – 2024), Vice-Chair (2011 – 2020), Member (2000 – present)

Publications

Books

- *Structural Bolting Handbook* - on testing, installation, inspection and use of bolts, published by SSTC, 2016
- *Structural Welding Quality Handbook* - on structural steel welding quality and inspection, published by SSTC, 2016
- *Shop Inspection Handbook for Structural Steel Buildings* - on references and standards, structural steels, fabrication, bolting, welding, and surface preparation/coatings, published by SSTC, 2010
- *Structural Steel Inspectors Workbook* - published by SSTC and International Code Council, 2014
- Chapter 8 on "Quality Control and Quality Assurance" for the textbook *Handbook of Structural Steel Connection Design and Details*, 3rd Edition, published by McGraw-Hill, editor Akbar Tamboli, 2017
- *Recommended Specifications and Quality Assurance Guidelines for Steel Moment-Frame Construction in Seismic Applications*, (FEMA 353), published by Federal Emergency Management Agency (lead guideline writer), 2000
- Chapter 12 on "Fabrication, Erection and Quality Control" for the textbook *Steel Design Handbook: LRFD Method*, published by McGraw-Hill, editor Akbar Tamboli, 1997
- *Welding – Design Procedures and Inspections*, Technical Instruction (TI 809-26), published by US Army Corps of Engineers, 1996
- *Guide to Metric Steel Fabrication*, published by American Institute of Steel Construction, 1990s

Papers

- *Plate Girder Flange Fractures – A Case Study and Lessons Learned*, International Institute of Welding, XV-1612-2020
- *Plate Girder Flange Fractures – Lessons Learned*, CanWeld 2019, Halifax Canada
- *Welding inspection – Tasks and responsibilities*, International Institute of Welding, XVIII-258r5-18
- *Structural Welding Inspection: who, what, where, when, why, and how many*, CanWeld 2018, Winnipeg Canada, *Weld Magazine*, Spring 2019
- *Independent Third-Party Welding Inspection: a Canadian and Global Perspective*, CanWeld 2017, Montreal Canada, *Weld Magazine*, Summer 2018
- *Inspection and NDE Protocols in National and International Steel Construction Standards*, International Institute of Welding, SC-QUAL-192r4-13, 2015
- *Comparison of ISO 5817 Quality Criteria to that of National Steel Construction Standards – Surface Imperfections and Imperfections in Joint Geometry*, International Institute of Welding, IIW-2583-15
- *Weld Quality in Standards – Engineering v Workmanship, and Inspection and NDE Protocols in International Standards*, proceedings of 1st Australasian International Welding, Inspection and NDT Conference, Perth Australia, March 2013
- *Design and Construction Standards for Steel Connections in Seismic Frames*, with James O. Malley, proceedings of 14th World Conference on Earthquake Engineering, Beijing China, October 2008
- *AISC Seismic Provisions for Structural Steel Buildings*, with James O. Malley, proceedings of 14th World Conference on Earthquake Engineering, Beijing China, October 2008
- *Meeting Challenges to Achieve Seismic Safety*, proceedings of IIW International Congress, Chennai India, January 2008
- *Project specifications for new steel moment-frame building construction*, Earthquake Spectra, Earthquake Engineering Research Institute, July 2003
- *Steel Design and Construction in the US after the Northridge Earthquake*, proceedings of Symposium on Steel Structure, Japanese Society of Steel Construction, Tokyo Japan, April 2002
- *Ultrasonic Testing Procedures, Technician Skills, and Qualifications*, ASCE Journal of Materials in Civil Engineering, American Society of Civil Engineers, Jan/Feb 2002
- *USA Practice for Steel Building Design, Welding and Inspection in Seismic Regions*, proceedings of 7th International Symposium of Japan Welding Society, Kobe Japan, November 2001
- *Engineering Decisions: Weld Quality Requirements*, proceedings of North American Steel Construction Conference (AISC), Ft Lauderdale FL, May 2001

Invited Lectures and Seminars

- Canada – Canadian Institute of Steel Construction, Canadian Steel Conference, *SpeedCore: a Revolutionary and Game-Changing Structural System*, with Amir Jamshidi, Vancouver BC, September 2022
- USA – NASCC – The Steel Conference (AISC), *Welding Requirements for Seismic Force Resisting Systems*, Denver CO, March 2022
- USA – NASCC – The Steel Conference (AISC), *Structural Steel Inspection: What, Where, When, How Many - and Above All, Why?*, Denver CO, March 2022
- Australia & New Zealand – Weld Australia, Australian Steel Institute, Heavy Engineering Research Institute, *Structural Bolting: Specification, Supervision, and Inspection*, eCourse, November & December 2020
- USA – NASCC, The Virtual Steel Conference (AISC), *WPSs and WPS Qualification: Guidance for Engineers, Fabricators and Erectors*, April 2020
- USA – AISC Live Webinar, *Getting the Welds You Need*, July 2020
- Canada – Canadian Centre for Welding and Joining, *Getting the Welds You Need and Want*, and *Structural Bolting – the other joining method*, Edmonton AB, March 2020
- USA – AWS/NACE/AISC/ASNT Inspection Expo & Conference, *Routine Observations for Bolting Inspection*, Dallas TX, January 2020
- USA – NASCC – The Steel Conference (AISC), *Engineers: Getting the Welds You Want and Need*, Nashville TN, March 2015, updated and repeated Saint Louis MO, April 2019
- Canada – Canadian Institute of Steel Construction, *Should we legislate the inspection of steel structures?*, CISC National Steel Symposium, Toronto, September 2016
- Iran – Iranian Society of Steel Structures, *High-Strength Bolting in Steel Structures* seminar, sponsored by Iran Tohid Co., Tehran, May 2016
- South Africa – South African Institute of Welding, *AWS D1.1 – Steel Structures* seminar/workshop, Johannesburg, January 2016
- Iran – Iranian Society of Steel Structures, 6th Conference on Steel and Structure, *Steel Construction: a Global Perspective* keynote, and *Inspection of Steel Building Structures* workshop, Tehran, December 2015
- Estonia – GSI SLV Baltikum / DVS / AWS, *Welding Structural Steel to American Standards*, and *Welding to the ASME Boiler and Pressure Vessel Codes*, Tallinn, June 2015
- New Zealand – Heavy Engineering Research Association, *Engineering the Repair and Retrofitting of Steel Structures*, Auckland, Hamilton, Wellington and Christchurch, April 2015
- Australia – Welding Technology Institute of Australia, *Structural Bolted Joints: Specifying and Achieving Performance*, Perth, Melbourne, Sydney and Brisbane, April 2015
- India – Indian Institute of Welding / American Welding Society, *AWS Lecture Series VII – Structural Welding: Design and Specification*, nine cities, December 2014
- New Zealand – Heavy Engineering Research Association, *Achieving Performance in Bolted Connections*, March 2013
- Australia – Welding Technology Institute of Australia, *Structural Welding Design*, five cities, March 2013
- Australia – 1st Australasian International Welding, Inspection and NDT Conference, *Weld Quality in Standards – Engineering v Workmanship*, and *Inspection*, and *NDE Protocols in International Standards*, Perth, March 2013
- USA – NASCC – The Steel Conference (AISC), *Suitable Inspection Intervals*, April 2012
- South Africa – South African Institute of Welding, *Welding and Inspection Requirements for Steel Structures in Accordance with AWS D1.1 Structural Welding Code – Steel*, and *Achieving Performance in Bolted Structural Joints*, Johannesburg, Durban, and Cape Town, May 2012
- New Zealand – Heavy Engineering Research Association, *Achieving Performance in Welded Seismic Connections*, Auckland, Wellington, and Christchurch, February 2012
- Australia – Welding Technology Institute of Australia, *Specifying and Achieving Performance in Structural Bolted Joints*, five cities, September 2010 and March 2013

- USA – NASCC – The Steel Conference (AISC), *Chapter N Inspection Intervals*, Grapevine TX, April 2012
- USA – NASCC – The Steel Conference (AISC), *AISC 360 Chapter N - Are You Ready?*, Orlando FL, May 2010 and Pittsburgh PA, May 2011
- Nigeria – Nigerian Institute of Welding, 1st Nigerian International Welding Congress, *The Engineering of Welded Structures: Design, Details, Production, and Quality*, and *Engineering for the Repair and Strengthening of Welded Steel Structures*, Abuja, March 2009
- Ecuador – Structural Engineers, Inc., *Bolted Connections, Welded Connections, Fabrication and Erection, Quality and Inspection*, and *Seismic Considerations*, Guayaquil and Quito, June 2008
- India – Institute of Steel Development and Growth, *Welding and Welded Connections, Bolting and Bolted Connections, Seismic Connections, Steel Erection, and Quality*, five cities, January 2008
- India – Indian Institute of Welding, IIW International Congress, *Meeting Challenges to Achieve Seismic Safety*, Chennai, January 2008
- USA – NASCC – The Steel Conference (AISC), *Steel Interchange Live!*, San Antonio TX, February 2006
- Japan – Japanese Society of Steel Construction, *Steel Design and Construction in the US after the Northridge Earthquake*, Tokyo, April 2002
- Japan – 7th International Symposium of Japan Welding Society, *USA Practice for Steel Building Design, Welding and Inspection in Seismic Regions*, Kobe, November 2001
- USA – North American Steel Construction Conference (AISC), *Engineering Decisions: Weld Quality Requirements*, Ft Lauderdale FL, May 2001
- USA – National Steel Construction Conference (AISC), *Welding Inspection*, New Orleans LA, April 1998
- USA – National Steel Construction Conference (AISC), *Inspection of Bolted Joints*, San Antonio TX, May 1995
- USA – National Steel Construction Conference (AISC), *Getting Your Share in Good Times and Bad*, Pittsburgh PA, May 1994
- USA – National Steel Construction Conference (AISC), *Q&A on the 3rd Edition, Quality Criteria and Inspection Standards*, Miami Beach FL, June 1988

Project Consultation – representative projects

- World Trade Center Transportation Hub, New York NY (welding, quality requirements)
- World Trade Center Oculus, New York NY (welding, quality requirements)
- 66 Hudson Yards, New York NY (welding, NDT requirements, steel forgings)
- 181 Mercer, New York, NY (welding)
- 200 Park Avenue, San Jose, CA (fabrication/erection planning, welding)
- (W)rapper, Culver City, CA (welding)
- Intel Fab 42 – Chandler AZ (welding)
- Intel D1X – Hillsboro OR (welding, cambering)
- Transbay Transit Center, San Francisco CA (shop welding for castings)
- Electric Boat, South Yard Assembly Building, Groton, CT (welding)
- New York Wheel (base), New York NY (thermal cutting, welding)
- Municipal Services Building, City of Glendale, CA (seismic retrofit, repair, welding)
- Bay Bridge, San Francisco - Oakland, CA (seismic retrofit, welding)
- Los Angeles County Courthouse, Van Nuys CA (seismic retrofit, welding)
- Los Angeles County DPW Building, Alhambra CA (seismic retrofit, welding)
- Gateway of Pacific, Phases 2 & 3, South San Francisco, CA (welding)
- LAX T4.5 Terminal Vertical Core, Los Angeles, CA (welding)
- Athletic Training Facility, Iowa State University, Ames IA (welding)
- Puente Hills Material Recovery Facility Administration Building, Whittier, CA (quality audit, welding)
- NASA Marshall Space Flight Center, Huntsville AL (inspection and evaluation protocol for existing test structure, fabrication and connection details for new test structures, weld repairs)
- University of Iowa Arts Building, Iowa City IA (welding)
- Ambassador Bridge, Detroit, MI (deck grating welding)
- Miller Park Baseball Stadium, Milwaukee WI (bolting, welding)
- D. L. Lawrence Convention Center, Pittsburgh PA (connection failure)
- IPFW Campus Cable Stayed Footbridge, Ft Wayne IN (evaluation, bolting, welding)
- SoFi Stadium, Inglewood, CA (bolting)
- Mercedes Benz Stadium, Atlanta GA (bolting)
- Explosives Handling Wharf, Naval Base Kitsap-Bangor WA (bolting)
- Arecibo National Observatory, Puerto Rico (bolting)
- Boeing 787 Assembly Plant, Charleston SC (bolting)
- Palazzo Tower, Las Vegas NV (bolting)
- Gordie Howe Bridge, Detroit, MI (bolting)
- Sellwood Bridge, Portland OR (bolting)
- Calpine Fremont Energy Center, Fremont, OH (bolting)
- Florida Power & Light Port Everglades Plant, Ft Lauderdale, FL (bolting)
- Port Everglades Power Plant, Fort Lauderdale FL (bolting)
- Tenaris Seamless Pipe Mill, Bay City TX (bolting)
- AHN Wexford Hospital, Wexford, PA (bolting)
- Koch-Glitsch fastener assembly and installation (pressure vessel process bolting)
- M-39 Cantilever Sign Structure, Dearborn, MI (anchor bolts)

International

- The Jewel, Changi International Airport, Singapore (bolting)
- New International Airport for Mexico City (fabrication and welding requirements, compliance)
- NIAMC Air Traffic Control Tower, Mexico City, Mexico (fabrication and welding quality, repair)
- Canadian Embassy, Riyadh, Saudi Arabia (steel blast walls, retrofit evaluation and recommendations)
- Puentes Combined Cycle Thermal Power Plant, La Coruna, Spain (steel tolerances, bolting)
- Third Highway System Bridge on the River Orinoco, Venezuela (bolting)
- Medupi Power Station, South Africa (bolting)
- Winnipeg Soccer Federation Complex, Winnipeg MB (bolting)

Technical Consultation

- Member, independent Peer Review Panel for Transbay (Salesforce) Transit Center, including investigation of girder failures, repair and retrofit of girders, whole-structure evaluation of structural steel system for brittle fracture and other performance risks, reporting to Metropolitan Transportation Commission (City and County of San Francisco, City of Oakland)
- Technical Consultant and Research Coordinator for XTB 200 ksi minimum tensile strength bolt assemblies (ASTM F3043 and F3111), Nippon Steel and Sumikin Bolten Corp.
- Principal Consultant and Instructor to update and instruct Federal Highway Administration / National Highway Institute course on "*High Strength Bolts for Bridges*"
- Lead Guideline Writer for *FEMA 353 Recommended Specifications and Quality Assurance Guidelines for Steel Moment-Frame Construction for Seismic Applications*, for the SAC Joint Venture Program to Reduce Earthquake Hazards in Steel Moment Frame Structures - Phase 2, and served on the Welding and Joining Technical Advisory Panel
- Principal Consultant to update the Commentary to the *AWS D1.5-96 Bridge Welding Code* for the NCHRP / Transportation Research Board

In-House Training Seminars - representative clients

Governmental Agencies

- Port Authority of New York and New Jersey (bolting inspection, welding inspection)
- State of California, Division of the State Architect (welding design, inspection)
- US Army Corps of Engineers (structural steel inspection)
- New York City Transit Authority / MTA (welding design, inspection)
- New York School Construction Authority (inspection)

Steel Fabricators and Erectors, Manufacturers

- Schuff Steel (bolting, seismic requirements, AISC QC/QA)
- American Bridge / Fluor Joint Venture (bolting)
- Tacoma Narrows Constructors (bolting)
- Danny's Construction (bolting, welding)
- Derr & Isbell Construction (bolting, AISC QC/QA)
- Barton-Malow (bolting)
- Vigor LLC (bolting)
- Atlas-Copco Drilling Solutions (welding design)
- Centria (welding inspection)

Structural Engineers and Inspection Agencies

- Ove Arup & Partners (welding design)
- Weidlinger Associates (welding design)
- STV Inc. (welding design)
- RK&K (steel bridge inspection)
- Churchill Engineering (structural steel inspection)
- Kakivik Asset Management (structural steel inspection)
- Aker Solutions (bolting)
- TTL (structural steel inspection)

Organizations

- QMC (bolting, AISC 360-10 Chapter N: QC and QA)
- Operating Engineers - ASIP - Local 150 (structural steel inspection)
- Structural Engineers Association of Idaho (welding design and inspection)
- Central Alaska Chapter of International Code Council (bolting inspection, welding inspection)

Recognition

Gold Medal Award, Canadian Welding Bureau Association, 2021

For outstanding paper submission at the 2019 CWB CanWeld Annual Conference

Gold Medal Award, Canadian Welding Bureau Association, 2018

For outstanding paper submission at the 2017 CWB CanWeld Annual Conference

International Meritorious Certificate Award, American Welding Society, 2017

In recognition of significant contributions to the worldwide welding industry

Thomas Medal, International Institute of Welding, 2016

For personal involvement in IIW work and contributions to international standardization in the field of welding

Arek Mekertichian Lectureship Award, Iranian Society of Steel Structures, 2015

For dedicated and sustained contribution to engineering knowledge of design and construction of modern steel structures in Iran

George E. Willis Award, American Welding Society, 2015

For promoting the advancement of welding, internationally, by fostering cooperative participation in areas such as technology transfer, standards rationalization and promotion of industrial good will

AISC Special Achievement Award, American Institute of Steel Construction, 2015

For his bolting and welding handbooks, which are simple reference books that capture the common guidance engineers and contractors need for bolts and welds

R. D. Thomas Memorial Award, American Welding Society, 2007

For a significant contribution in the field of welding to the International Institute of Welding and dedication to the concept of technological growth through international collaboration

AISC Special Achievement Award, American Institute of Steel Construction, 2000

For his origination and development of Student Steel Bridge Competition, which has thrilled thousands of engineering students while also providing a practical experience in design and construction

Professional Employment

Steel Structures Technology Center, Inc.

- President (1990 – present)

American Institute of Steel Construction, Inc.

- Associate Director of Education (1986 – 1990)
- Regional Engineer (1981 – 1986)

Mississippi Valley Structural Steel Division of Bristol Steel and Iron Works, Inc.

- Sales Engineer (1976 – 1981)
- Project Engineer (1975 – 1976)
- Student Intern / Detailer (1973 – 1975)